



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 8
999 18TH STREET - SUITE 500
DENVER, CO 80202-2466

SDMS Document ID



1005113

Ref: 8EPR-ER

APR 7 2004

ACTION MEMORANDUM

ADMINISTRATIVE RECORD

SUBJECT: Request for a Time Critical Removal Action Approval at the Vermiculite Intermountain Site, Salt Lake City/County, Utah 84104

FROM: Floyd D. Nichols, On-Scene Coordinator
Emergency Response Team

FOR
FLOYD NICHOLS

THROUGH: Steve D. Hawthorn, Supervisor
Emergency Response Unit

Douglas M. Skie, Director
Preparedness, Assessment & Emergency Response Programs

TO: Max H. Dodson, Assistant Regional Administrator
Office of Ecosystems Protection & Remediation

Site ID#: 08GA

Category of Removal: Fund-Lead, Time Critical

I. PURPOSE

The purpose of this ACTION MEMORANDUM is to request and document approval of a combined initial Time-Critical Removal Action and a 12-month & \$2 million exemption from the statutory limits for the Removal Action described herein at the Vermiculite Intermountain site (Site), located in Salt Lake City, Utah.

This Removal Action addresses the need to mitigate the threats to the local population and the environment posed by a fibrous form of amphibole asbestos at the Site, including properties adjacent to the former facility. The asbestos was co-mingled with vermiculite ore shipped to the Vermiculite Intermountain facility from a mine near Libby, Montana. In Salt Lake City, the vermiculite ore was "exfoliated" (expanded in a dry furnace) to produce insulation products for the Salt Lake City commercial, wholesale, and retail markets. The exfoliation plant operated at the Site for over four decades. In addition, a variety of vermiculite products were formulated and distributed from the facility.

Conditions existing at the Site present a threat to public health or welfare or the environment and meet the criteria for initiating a Removal Action under 40 CFR, Section 300.415(b)(2) of the National Contingency Plan (NCP). Conditions at the Site meet the emergency criteria for exemption from 12-month and \$2 million statutory limits for a Removal Action.

II. SITE CONDITIONS AND BACKGROUND

The plant was one of many facilities that received vermiculite from a mine near Libby, Montana. The Libby mine produced about 80% of the world's supply of vermiculite at one time and shipped vermiculite concentrate to various locations throughout the United States. The Libby vermiculite was co-mingled with amphibole asbestos of the tremolite-actinolite-richterite-winchite solution series and, as a result, there is asbestos contamination at many of the facilities which received vermiculite concentrate from the Libby mine.

The Vermiculite Intermountain plant, which is located at or near 333 West 100 South, Salt Lake City, Utah, began operation in 1940. According to a 1984 business newspaper article, Lee Irvine was the president of Vermiculite Intermountain, a company licensed by the W. R. Grace company to manufacture insulation products. The 1984 news article also stated that the manufacturing operations were to be moved to a new Salt Lake City location at 733 West 800 South and continue in operation, dba Intermountain Products. At that new location, the plant operated until the business declared bankruptcy in 1987. Invoices obtained from W. R. Grace, which purchased the Libby mine in 1963, show that over 25,000 tons of vermiculite concentrate were shipped to the 333 West 100 South address prior to 1980. EPA has no information at this time whether this is a comprehensive total of Libby vermiculite shipped to this facility.

A. Site Description

1. Physical location

The Site is located at or near 333 West 100 South, Salt Lake City, Utah.

2. Removal Site Evaluation and Site Characteristics

The Vermiculite Intermountain facility received vermiculite concentrate from a mine near Libby, Montana, in rail cars. The ore was dumped at the Site and exfoliated in a dry furnace. The exfoliated vermiculite was subsequently distributed to the Salt Lake City-area wholesale and retail markets, with some quantities being sold as insulation material or as a constituent in various products including "Zonolite". The facility also produced other products which involved mixing the concentrate or expanded vermiculite into plaster-like compounds, such as "Monokote".

The former Vermiculite Intermountain (VI) facility (Attachment 1- Facility Area Map), including the furnace and 'smoke stack', was demolished in the 1986 and the servicing rail road bed removed. The Site is now a vacant, graveled, rectangular lot located immediately east of the Utah Power and Light (UPL) 3rd West Electrical Substation, and just south of the Salt Lake City's Delta Center (sports) complex. Portions of the VI building foundation are still visible just to the east of the substation's above-ground equipment. The Site is currently owned by the Utah Power and Light Co., a subsidiary of PacifiCorp. Reportedly, PacifiCorp is currently owned by Scottish Power, based in Glasgow, Scotland.

The Site, located generally in the middle of a downtown city block, is currently surrounded on three sides by active commercial establishments and on the 4th side by the UPL substation. Precipitation falling on the Site generally infiltrates directly into the ground, through the gravel cap. Any sheet-runoff would be directed to the west, onto the sidewalk and gutter bordering 400 West Street. Surrounding the Site are:

- The Utah Power and Light Substation parcel currently encompasses the Site. The Site is denoted by the old VI building foundation, visible just east of the substation's above-ground hardware. The electrical substation, immediately west of the Site, consists of a 8,800 square foot, 2-story cinder-block storage/switch building surrounded and overtopped by an array of above-ground and elevated transformers, capacitors, breakers, wires, etc. The substation is underlain by a grounding plane at a depth of approximately 18 inches. Power is routed to and from the substation via underground conduits. The entire UPL parcel surface is capped by crushed gravel to an approximate depth of 0-6 inches.

The storage/switch building interior consists primarily of two long rooms. The substation is visited frequently by a limited number of UPL employees as they go about their routine activities. Anecdotal information suggests that a portion of the property is occasionally used for parking by UPL personnel when they attend events at the Delta Center directly across the street.

The Utah Transit Authority has a long-term lease on the northwest corner of the substation parcel for one of its Tractor Power Substation (TPS) units which supports the Salt Lake City Light Rail system. The substation is separated, on the west, from 400 West Street by a block wall.

Vermiculite is visible on the exposed ground surface across the Site - most notably in areas within the VI building footprint. Vermiculite is also visible on the ground surface in other areas of the UPL substation when the overlying gravel cap is scraped away. Analysis of samples collected from on and around the substation parcel (discussed further below) shows presence of

varying amounts of Libby Amphibole (LA) fibers. Analysis of dust samples collected inside the storage/switch building showed very significant amounts of LA fibers.

- The Artistic Printing Company, a small custom print shop, is a few feet to the northwest of the Site and currently separated from the Site by a chain-link fence. The 18,000 sq ft, slab-on-grade building was constructed prior to 1940. The building is currently in daily use by 24 employees working two shifts, 5-days per week.

The building was constructed with block walls and a high, mostly-flat roof. A small, central roof section is pitched so as to accommodate a row of windows above the building's center line. Additional windows, providing light and ventilation, are on all sides of the building.

A company representative stated that, before the installation of evaporative coolers, routine practice was for the building occupants to open all the available windows in the summertime for ventilation and cooling. The representative also provided anecdotal information about periodic fumigation of the building by emissions from the Site smokestack, resulting in deposition of stack particulate matter on the roof and other outside horizontal surfaces and, through the open windows, onto interior horizontal surfaces.

The building interior is subdivided into several large and small work and/or storage rooms. Typically, the large printing and binding units are situated in the middle of the larger rooms, with the ancillary equipment surrounding the units or in adjacent rooms, and the in/out inventory and other supplies kept in areas further removed from the units. The building also encloses an office area (with a low, false ceiling) and an open employee break area near the southeast corner.

Analysis of dust samples collected inside the Artistic Printing facility in 2003 showed significant amounts of LA fibers.

- The LaQuinta Parcel, including the AMPCO (leased) Parking Lot and the Frank Edwards Building, immediately borders the Site on the north and northeast sides and is separated from the Site by a chain link fence. The parking lot, consisting of an asphalt cap on 20 - 36 inches of fill material, is used daily, primarily by individuals visiting or working in downtown Salt Lake City or the (across-the-street) Delta Center. The Frank Edwards Building, a one-story 23,000 square foot structure, is on the northeast corner of the block, approximately 300 feet northeast of and across the parking lot from the Site. Reportedly, the building was last occupied by crew(s) supporting the 2002 Winter Olympics. The building is currently unoccupied, and the building and lot are being marketed by the owner.

Subsurface soil samples were collected below the parking lot surface in late summer 2003, along a line parallel to the Site's eastern fence, offset from the fence by approximately 20 feet. Analysis of those samples showed trace amounts of LA fibers at a depth of 20 - 30 inches below grade at the assumed original ground surface/fill material interface.

Analysis of dust samples collected inside the Frank Edwards Building in December 2003 showed a moderate amount of LA fibers in an office area. Due to a data transcription error, more samples may be performed in the near future.

- The Utah Paper Box Company immediately borders the Site on the south, and is separated from the Site by a chain link fence sitting atop a low retaining wall. Portions of the 57,000 sq. ft., slab-on-grade, elongated building were constructed before 1940. The building is currently in daily use by 60 employees working multi-shifts, 7-days per week.

The building interior is subdivided into several large and small work and/or storage rooms. Typically, the large printing and box-assembly units are situated near the middle of the larger rooms, with the ancillary equipment surrounding the units or in adjacent rooms, and the in/out inventory and other supplies kept in areas further removed from the printing and assembly units. The building also encompasses numerous corporate and business offices as well as planning, drafting, and other, related work stations. Most of the interior office spaces have false ceilings and are individually walled-off from the large work rooms. Currently, there are no windows on the building's north face, the wall facing the Site.

A Company representative offered anecdotal information concerning prior litigation between Utah Paper Box and Vermiculite Intermountain because of repeated VI fumigation of UPB.

Analysis of dust samples collected in various areas inside the Utah Paper Box facility in 2003 failed to detect any LA fibers. Analysis of those samples did show, however, presence of minor amounts of chrysotile.

EPA has conducted several sampling events at the Site and inside the buildings surrounding the Site. Analysis of the samples collected shows the presence of LA fibers in significant concentrations in on- and off-facility soils and in dust collected from within work spaces in businesses adjacent to the Site.

3. Release or threatened release into the environment of a hazardous substance, or pollutant or contaminant

Amphibole asbestos is of concern because chronic inhalation of excessive levels of fibers suspended in breathing air can result in lung diseases such as asbestosis,

mesothelioma, and cancer. Subacute exposures to elevated levels for even a few days have been shown to cause mesothelioma.

Amphibole asbestos is a hazardous substance as defined by 40 CFR Section 302.4 (the National Contingency Plan (NCP)). The solid-solution series of tremolite-actinolite-richterite-winchite (referred to in this document as amphibole asbestos) was present in the vermiculite ore shipped from the Libby Mine. Sampling events at the Site have confirmed the presence of amphibole asbestos in concentrate residues, soils, and dust at concentrations of concern. Accordingly, this concentration represents an unacceptable current and on-going future risk to workers at and visitors to the Site and to the general population occupying nearby businesses and/or downtown venues.

Visible vermiculite is present on the ground surface at the Site, and has been identified through scientific analysis at varying depths in Site soils and at various surface and subsurface horizons on adjacent parcels. LA fibers have also been found at varying concentrations inside buildings on adjacent properties. From any of these contaminant sources, LA fibers are likely to become airborne when disturbed by such activities as wind gusts, surface erosion, foot traffic, automobile traffic, and routine business-related and/or maintenance activities. A tornado struck the Site directly about a decade ago. In soil-raking scenarios demonstrated at the VI-successor site, asbestos fibers became airborne into the breathing zone when lightly disturbed: the chain link fence surrounding this Site is not sufficient to prevent offsite dispersion of any suspended fibers. Significant concentrations of LA-contaminated dust are present inside the buildings adjacent to the Site. Renovation to and/or routine maintenance activities conducted in those buildings could result in unacceptable exposures to building workers or visitors during such activities and could also result in a release of LA fibers outside the buildings and into the environment. Accordingly, there is the potential for direct exposure of people to the LA inside those adjacent businesses, as well as a secondary exposure risk to other people, if fibers are tracked out of the buildings and subsequently become airborne.

The Libby NPL Site Administrative Record contains many academic papers discussing the hazards associated with asbestos in general, and Libby-amphibole asbestos in particular. The documents in the Libby NPL Site Administrative Record are incorporated herein by reference.

4. NPL status

This Site is not being considered for inclusion on the National Priorities List (NPL).

B. Other Actions to Date

1. Previous actions

There have been no previous CERCLA Removal Actions at this Site. Reportedly, UPL performed limited asbestos abatement on a portion of the Site in 2003.

Results from the EPA 2003 sampling activities showed residual amounts of Libby LA on the Site surface subsequent to the UPL abatement activity.

2. Current actions

There are no other pending Federal or State actions at this Site.

C. State and Local Authorities' Roles

EPA has repeatedly briefed representatives of the Utah Department of Environmental Quality (UDEQ) and other local agencies about the investigation and the sampling events and has consulted with them about the investigation findings and analytical results received to date. In addition, UDEQ representatives have participated in numerous planning meetings and have worked closely with EPA in developing associated Site work, ARARs, and community outreach plans. Neither the State nor local agencies have the resources necessary to independently conduct the needed Site investigations or clean-up.

III. THREATS TO PUBLIC HEALTH OR WELFARE OR THE ENVIRONMENT, AND STATUTORY AND REGULATORY AUTHORITIES

A. Threats to Public Health or Welfare

The adverse health effects from exposure to Libby amphibole asbestos have been documented among W.R. Grace workers in Libby, those who have received secondary exposures in Libby (i.e., non-occupational), and others around the country. With respect to the secondary exposures in Libby, the Agency for Toxic Substances and Disease Registry (ATSDR) conducted medical screening of several thousand citizens in Libby and documented the occurrence of significant lung abnormalities among family members of former Grace employees. The ATSDR screening also found significant rates of lung abnormalities among people with "recreational" contact with various vermiculite materials that contain amphibole asbestos. Outside of Libby, there is evidence that Grace workers suffered high rates of asbestos-related disease at various Grace processing plants across the country.

A memorandum from Dr. Aubrey Miller, Senior Region 8 Medical Officer and Toxicologist, regarding the Libby vermiculite and amphibole asbestos, is attached to this Action Memorandum (Attachment 2). Generally, Dr. Miller concludes that the amphibole asbestos found in Libby vermiculite can yield significant amounts of respirable amphibole asbestos fibers. He further concludes that exposure to these fibers has been shown to have pronounced adverse medical consequences, and can present an unacceptable risk to those who may be exposed to LA in even minute quantities.

This information along with the host of other information found in the Libby NPL Site Administrative Record has led the EPA to make the following general conclusions: (1) whenever materials associated with Libby vermiculite can be found there will most likely be associated with it high concentrations of amphibole asbestos; (2) the amphibole asbestos found in the Libby vermiculite is highly toxic; (3) the amphibole asbestos associated with the Libby vermiculite readily produces respirable fibers when disturbed; and, (4) any time when there exists a condition such that there will be people in or around the amphibole asbestos there is a high probability for exposure, and this probability presents an unacceptable risk to public health.

The threat of exposure to workers and visitors to the Vermiculite Intermountain Site, nearby residents, and employees at local businesses exists through the potential inhalation of LA fibers. Therefore, conditions at the Site present an imminent and substantial endangerment to human health and the environment and meet the criteria for initiating a Removal Action under Section 300.415(b)(2) of the NCP. All of the factors from §300.415(b)(2) of the NCP have been considered and the following form the basis for EPA's determination of the threat presented, and the appropriate action to be taken:

- (i) Actual or potential exposure to nearby human populations, animals, or the food chain from hazardous substances: The presence of amphibole asbestos found at and around the Site in the soil and dust are a threat to human health. In addition, any disturbance of the ground surface or dust patina can cause LA fibers to become airborne at unacceptable concentrations. Persons routinely occupy or visit potentially contaminated areas for personal or occupational uses. Also, maintenance activities in areas with high concentrations of LA fibers could result in a release to the breathing zone of unacceptable concentrations of amphibole asbestos.

Investigations focused on the Libby vermiculite have shown that exposures to the Libby amphibole may result in asbestos-related diseases and death. Studies by NIOSH researchers at other expansion (exfoliation) plants and at the Libby mine, as well as those sponsored by W. R. Grace, clearly show the deleterious health effects to people who were exposed to the LA fibers. In addition, the Public Health Service and ATSDR are conducting an epidemiological evaluation of certain facilities that processed Libby vermiculite ore, both in Libby and around the country. So far, they have discovered documented medical cases where the primary source of exposure to the LA fibers appears to be in non-occupational settings.

As a result of EPA investigations in Libby, it has now become apparent that direct contact with the Libby ore tends to generate significant airborne fiber concentrations. For example, EPA saw evidence that aggressive sampling of bulk materials, conducted in two Libby homes in December 1999, generated excessive amounts of airborne fibers. Also, given the number of cases of asbestos-related disease and death associated with handling ore from the Libby mine, it is reasonable to conclude that any human exposure to the Libby amphibole asbestos may be an imminent and substantial endangerment to public health and welfare.

- (iv) High levels of hazardous substances in soils largely at or near the surface that may migrate; Contaminated vermiculite is visible on the ground surface at the Site. Through laboratory analysis, Libby amphibole asbestos has been identified in Site surface and near-surface soils, and in dust accumulations inside buildings immediately adjacent to the site. These asbestos fibers can become entrained in the air, possibly resulting in inhalation exposures. In addition, contaminated soils or dust can be released from the Site by automobile or foot traffic, on equipment moved from or around inside businesses located adjacent to the Site, through sheet runoff, or via high winds. In particular, Utah central valley winds, particularly in dry summer months, can lead to the release of fine asbestos fibers from the Site.

Currently EPA has not established under any of its regulatory programs an asbestos level in soil below which an exposure does not pose a risk. The 1% cut-off level for regulation under the Toxic Substances Control Act abatement program was established on the basis of analytical capability at the time, and was not established based on the level of risk represented. To the contrary, at Superfund sites in California, EPA Region 9 found in certain settings that concentrations of asbestos less than 1% posed unacceptable inhalation risks when subjected to disturbance by traffic. EPA's "dust-raising" scenarios at the Vermiculite Intermountain sister site in Salt Lake City demonstrated that airborne fibers easily exceeded the OSHA limits even though bulk samples of soil and vermiculite on the ground surface were well-below the 1% TSCA threshold.

- (vii) The (lack of) availability of other appropriate federal or state mechanisms to respond to the release; No other Local, State, or Federal agency is in the position or has the resources to independently implement an effective response action to address the on-going threats presented at this Site.

B. Threats to the Environment

To date, the Site investigation has not considered if the asbestos contamination is a threat to animals, water, and other parts of the environment. Asbestos is primarily a human health threat via an inhalation exposure pathway.

IV. ENDANGERMENT DETERMINATION

Asbestos is a generic term for a group of six naturally-occurring fibrous silicate minerals. The predominant fibrous habit of minerals found at the Site are of the tremolite-actinolite solid solution series (referred to in this Action Memorandum as amphibole asbestos). Asbestos can cause asbestosis and is a recognized human carcinogen, causing lung cancer and mesothelioma, a lethal neoplasm of the lining of the chest and abdominal cavities. Cancer of the larynx and esophageal lining has also been associated with exposure to asbestos. Commercial forms of asbestos have been found to be carcinogenic in experimental animals.

There are documented asbestos-related illnesses and deaths in Libby and near those exfoliation facilities around the country which processed Libby vermiculite ore. A number of the Libby victims did not work at any of the vermiculite processing areas, but received their exposures in other, non-work-related ways i. e., workers at the Libby vermiculite plants wore their dusty clothes home, thereby exposing family members. Also, Libby residents reported playing in piles of vermiculite ore and/or exfoliation products as children. The Vermiculite Intermountain facility in Salt Lake City received and processed Libby vermiculite ore for over four decades, and EPA's sampling shows the lingering presence of substantial amounts of Libby amphibole asbestos at and adjacent to the Site.

Actual or threatened releases of asbestos from this Site, as well as current, ongoing human exposure to contaminated dust by people who may come into contact with the material in their normal workplace, if not addressed by implementing the response action selected in this Action Memorandum, present an imminent and substantial endangerment to public health, welfare, and the environment.

V. EXEMPTION FROM STATUTORY LIMITS

A. Emergency Exemption:

Site conditions meet the criteria set forth in CERCLA §104(c)(1)(A) [40 CFR 300.415 (b)(5)(i) of the NCP].

1. There is an immediate threat to the local population posed by the amphibole asbestos released to the environment. Visible vermiculite is present on the ground surface at the Site, and has been identified through scientific analysis at varying depths in Site soils and at various surface and subsurface horizons on adjacent parcels. LA fibers have also been found at varying concentrations inside buildings on adjacent properties. From any of these contaminant sources, LA fibers are likely to become airborne when disturbed by such activities as wind gusts, surface erosion, foot traffic, automobile traffic, and routine business-related and/or maintenance activities. Renovation to and/or routine maintenance activities conducted in the buildings could result in unacceptable exposures to building workers or visitors during such activities and could also result in a release of LA fibers outside the buildings and into the environment. Accordingly, there is the potential for direct exposure of people to the LA inside the adjacent businesses, as well as a secondary exposure risk to other people, if fibers are tracked out of the buildings and subsequently become airborne.

2. Continued response actions are required to prevent, limit, or mitigate an emergency. If the request for a 12-month and \$2 million statutory exemption is not granted, the Removal Action will not be able to proceed to completion. Total costs of the Removal Action are anticipated to exceed \$2 million due to the size of the properties and the extensive amount of soil contamination; and the large amount of excavation and monitoring of landscape restoration may cause the Removal to extend past 12 months.

3. Assistance from other government agencies is not anticipated on a timely basis for these Removal Actions. Neither the State nor the County has the response capabilities or resources to take any actions independently at the Site. No other mitigation actions are expected to occur to abate the threats described in this action memorandum. Consequently, the timely completion of this Removal Action can only be accomplished if this combined Time-Critical Removal Action and 12-month & \$2 million exemption request is approved.

VI. PROPOSED ACTIONS AND ESTIMATED COSTS

A. Proposed Actions

1. Proposed action description

To mitigate the threat to the public health and welfare or the environment posed by the asbestos present at the Site, this Removal will involve the following:

- a. Excavation and/or removal of approximately 3,900 cubic yards of LA-contaminated soils, dust, and miscellaneous debris from the Site and the surrounding properties, including the storage/switch building, the electrical substation parcel, the Artistic Printing Company facility, and the Frank Edwards Building.
- b. Removal action for the LaQuinta Parking Lot: The LaQuinta-leased parking lot between the Frank Edwards Building and the 3rd West Electrical Substation covers approximately 100,000 square feet. As part of this action, additional investigation to characterize probable contamination under the AMPCO parking lot (owned by La Quinta Inns) will be performed. Any contamination found to be a concern will be addressed in a revised action memo; therefore, the cost estimate contained in this memorandum covers only the actions prescribed herein. Currently, direct human contact with an unknown quantity of LA residues on the lot is prevented by the existing asphalt cap and the intervening soil layer. Direct human contact with the LA is prevented as long as the integrity of this cap/soil overburden layer remains intact. However, if this cap/soil overburden layer is disturbed to the extent that LA becomes exposed on the surface, direct human exposure to LA becomes likely. Accordingly, controls (i.e., Institutional Controls, deed restrictions, zoning restrictions, etc.) should be placed such that continuing integrity of the cap/soil overburden layer can be assured. If the current lot owner, or any future owner, contemplates development of this lot (i.e., excavation for new construction), LA removal and disposal, followed by aggressive site clearance, shall be accomplished concurrent with the new site redevelopment actions.

As there are no current known plans for lot excavation, redevelopment, etc., EPA's current Removal Action for this Site does not include cleanup actions on this parking lot. However, if or when such plans become known, EPA will prioritize and schedule the appropriate action(s) to address any remaining LA contamination under the parking lot.

- d. Except as noted in §(V)(A)(1)(b) [above] comprehensive clearance sampling, followed by disposal of the dust and miscellaneous debris removed from the Site and from buildings immediately adjacent to the Site.
- e. Decontamination, transportation, and/or disposal of related waste material.
- f. Property restoration, including placement of backfill, topsoil, and compaction.

2. Contribution to remedial performance

This Removal Action will be a final cleanup. No additional action will be required unless new contaminated areas are discovered in the future. All contaminated areas will be excavated as a cost-effective and efficient means to avoid any future investigations or re-mobilizing for cleanup.

3. Description of alternative technologies

No alternative technologies were found to be appropriate given the nature of the asbestos contamination, the physical location and scope of the project, and its time critical nature. If in the course of this or any subsequent removal actions at the Site, any alternative remediation technologies are identified that will enhance response actions, they will be considered, as appropriate.

4. EE/CA

This is a Time-Critical Removal Action; thus, an EE/CA is not required.

5. Applicable or relevant and appropriate requirements

As this Action is being conducted as a Time Critical Removal Action, all Federal and State ARARs may not have been identified at this time. The ARARs identified to date are provided as Attachment 3. In accordance with the NCP, all ARARs for the Site will be attained to the extent practicable, given the scope of the project and the urgency of the situation as they are identified.

Many of the ARARS identified for these Removal Actions come from the Clean Air Act National Emission Standards for Hazardous Pollutants (NESHAPS) for asbestos. These regulations were designed specifically for renovation and

demolition of buildings with asbestos containing material (ACM) such as floor tile, ceiling tile and pipe wrapping. The regulations were not designed for loose fill vermiculite insulation, piles of unexpanded vermiculite, contaminated soils or heavily contaminated dust. As such, it is anticipated that it may not be practicable to achieve all ARARS during this Removal Action because the regulations contemplate removing all asbestos prior to renovation or other activities.

6. Project Schedule

It is anticipated that the Removal Action will commence in early Spring 2004 and monitoring of landscape restoration can be completed by Summer of 2005.

B. Estimated Costs

EXTRAMURAL COSTS:

ERRS Personnel & Equipment	\$ 664,000
Transportation & Disposal	15,000
Volpe IAG (including Sampling Contractor)	689,000
20% Contingency	<u>273,600</u>

TOTAL EXTRAMURAL COSTS \$1,641,600

INTRAMURAL COSTS:

Intramural Direct Costs (10%) \$ 164,160

TOTAL EXTRAMURAL + INTRAMURAL \$1,805,760

Indirect Costs (35%) \$ 632,016

TOTAL ESTIMATED EPA COSTS FOR REMOVAL ACTION **\$2,437,776**

The total EPA costs for this removal action, to be based on full-cost accounting practices, that will be eligible for cost recovery are estimated to be \$2,437,776. Direct Costs include direct extramural costs and direct intramural costs. Indirect costs are calculated based on an estimated indirect cost rate expressed as a percentage of site-specific direct costs, consistent with the full cost accounting methodology effective October 2, 2000. These estimates do not include pre-judgment interest, do not take into account other enforcement costs, including Department of Justice costs, and may be adjusted during the course of the removal action. The estimates are for illustrative purposes only and their use is not intended to create any rights for responsible parties. Neither the lack of total costs estimates nor deviation of actual costs from this estimate will affect the United States' right to cost recovery.

VII. EXPECTED CHANGE IN THE SITUATION SHOULD ACTION BE DELAYED OR NOT TAKEN

Delayed action will increase public health risks to the local population/environment posed by airborne asbestos fibers.

VIII. OUTSTANDING POLICY ISSUES

The Removal Action described in this Action Memorandum does not raise any fundamental response issues, nor does it set any broader policy precedent or constitute a nationally significant issue relating to vermiculite insulation. Asbestos removals have been completed in Region 8, and around the country at numerous removal sites which were initiated under Section 300.415 of the NCP and in compliance with NESHAPS regulation under 40 CFR Section 61.150. This removal does not set a precedent or constitute a nationally significant issue.

IX. ENFORCEMENT

A separate addendum will provide a confidential summary of current and potential future enforcement actions.

X. RECOMMENDATION

This decision document represents the selected Removal Action for the Vermiculite Intermountain site, Salt Lake City, Utah, developed in accordance with CERCLA as amended, and not inconsistent with the NCP. This decision is based on the Administrative Record for the Site.


Conditions at the Site meet the NCP Section 300.415(b)(2) criteria for a Removal, and I recommend your approval of the proposed removal action. The total project ceiling will be \$2,437,776. Of this, an estimated \$1,805,760 comes from the Regional removal allowance.

Approve:



Max H. Dodson
Assistant Regional Administrator
Office of Ecosystems Protection
and Remediation

Date:



Disapprove: _____ **Date:** _____

Max H. Dodson
Assistant Regional Administrator
Office of Ecosystems Protection
and Remediation

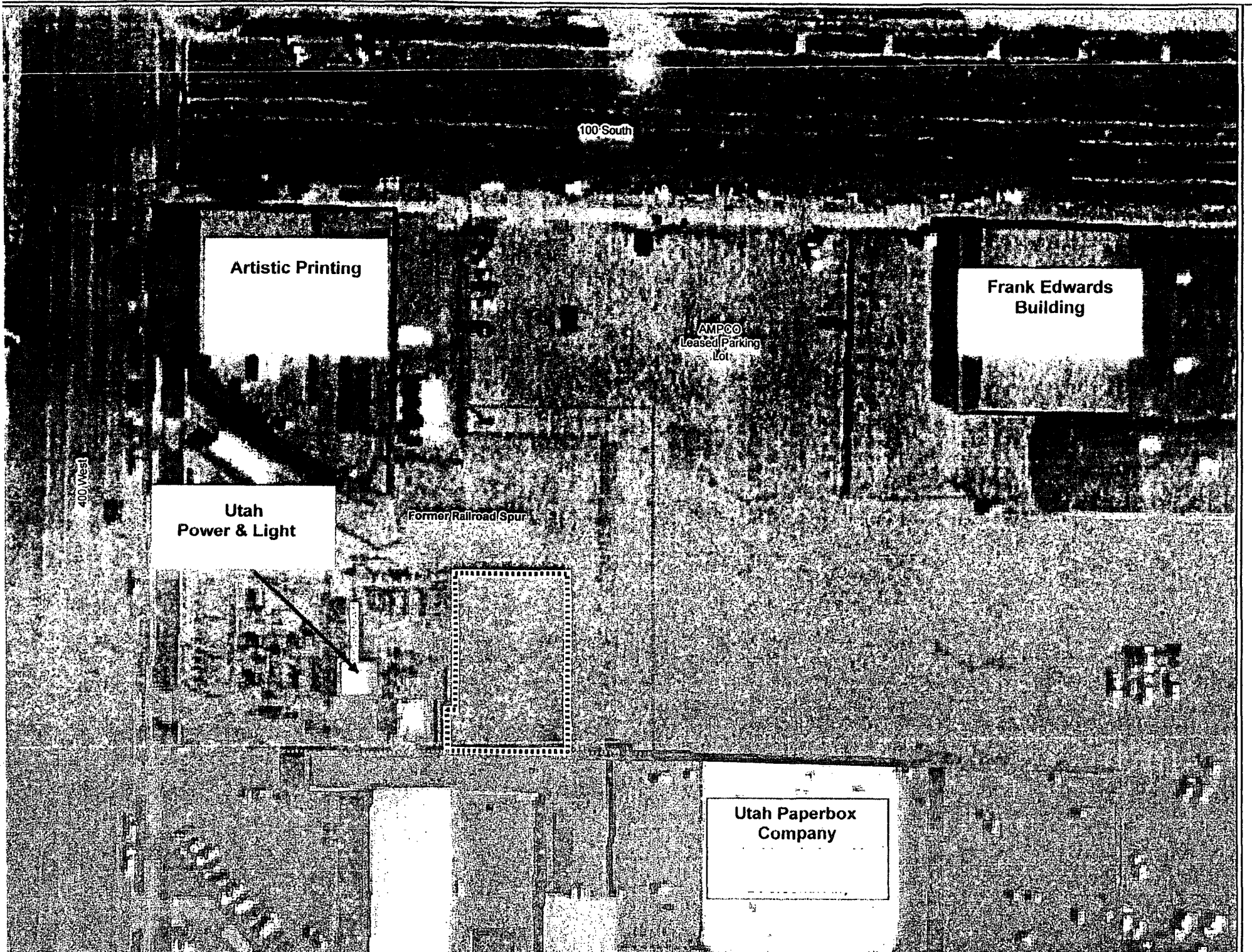
Attachments:

- Attachment 1 - Facility Area Map
- Attachment 2 - Toxicologist Memorandum
- Attachment 3 - Applicable or Relevant & Appropriate Requirements

SUPPLEMENTAL DOCUMENTS

Support/reference documents which may be helpful to the reader and/or have been cited in the report may be found in the Administrative Record Files for the Vermiculite Intermountain site at the Superfund Records Center for Region VIII EPA, 999 18th Street, Denver, Colorado 80202.

Attachment 1 - Facility Area Map





UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 8
999 18TH STREET - SUITE 500
DENVER, CO 80202-2466

March 18, 2004

Ref: 8EPR-PS

MEMORANDUM

SUBJECT: Endangerment Memo: Health Risks Secondary to Exposure to Asbestos at the Former Vermiculite Intermountain Site at 100 South 333 West (SLC2), Salt Lake City, Utah.

FROM: Aubrey K. Miller, MD, MPH
Senior Medical Officer & Regional Toxicologist
Program Support Group

TO: Floyd Nichols
On-Scene Coordinator
Emergency Response Team

I. PURPOSE

This memorandum presents the rationale for determination of imminent and substantial endangerment to public health from current asbestos contamination associated with the historical processing of vermiculite from Libby, Montana at the Former Vermiculite Intermountain Insulation Facility at 100 South 333 West (SLC2), Salt Lake City, Utah.

II. SUMMARY OF FINDINGS

- 1) Asbestos material is present in dust and soil at the SLC2 site. This asbestos material is consistent with asbestiform amphiboles from Libby, Montana containing a series of closely related minerals including actinolite, tremolite, winchite and richterite. Asbestos fibers of this type are known to be hazardous to humans when inhaled.
- 2) Mechanical disturbance of asbestos-contaminated soil or dust by activities similar to those that are likely to be performed by area workers results in elevated levels of respirable asbestos fibers in air.
- 3) On this basis, it is concluded that: a) soil and dust at this site contain elevated



levels of friable asbestos minerals from Libby, Montana, b) contaminated soil and dust will result in a complete pathway for human exposure and will serve as a source of on-going release of hazardous fibers to air, and c) it is necessary to reduce or eliminate pathways of exposure of this material to workers and others who may frequent the area.

III. BACKGROUND

A. Libby, Montana Vermiculite Mining

Vermiculite was discovered in the Rainy Creek Mining District of Lincoln County, Montana, in 1916 by E.N. Alley. Alley formed the Zonolite Company and began commercial production of vermiculite in 1921. Another company, the Vermiculite and Asbestos Company (later known as the Universal Insulation Company), operated on the same deposits (BOM, 1953). W.R. Grace purchased the mining operations in 1963 and greatly increased production of vermiculite until 1990 when mining and milling of vermiculite ceased.

Vermiculite ore bodies on Zonolite Mountain contain amphibole asbestos at concentrations ranging up to nearly 100% in selected areas (Grace; per Libby Administrative Record). Although early exploration mining efforts by the Zonolite Company focused upon the commercial viability of fibrous amphibole deposits found on Zonolite and Mountain (DOI, 1928), no commercial production of asbestos from the Libby mine is reported.

Residual fiber contamination at the Libby site and former offsite processing facilities continues to present a potential for hazardous exposure to workers, residents, and visitors at these facilities. Contamination at these sites is presently being addressed under removal authorities provided in the Comprehensive Environmental Response Compensation and Liability Act Section 104 (CERCLA or Superfund). These actions by the U.S. Environmental Protection Agency Region 8 office in Denver, CO, began on November 22, 1999, and continue today.

B. Salt Lake City (SLC2) Vermiculite Processing Site

The Salt Lake City vermiculite business was originally named Vermiculite Intermountain and was started in 1940. The exfoliation plant was originally located in downtown Salt Lake City at 100 South 333 West (SLC2 site). According to a 1984 business newspaper article, Lee Irvine was the president of Vermiculite Intermountain, a company licensed by the W. R. Grace company to manufacture insulation products. The 1984 news article also stated that the manufacturing operations were to be moved to a new Salt Lake City location at 800 South 733 West (SLC1 Site) and continue operations of Intermountain Products. Shortly thereafter operations were moved to the new location and the exfoliation plant continued to operate until closure in 1987. Invoices obtained from W. R. Grace, which purchased the Libby mine in 1963, show that over 25,000 tons of vermiculite ore were shipped to the 100 South 333 West address prior to 1980. EPA has no information at this time concerning the total amounts of Libby vermiculite shipped to Vermiculite Intermountain at this (SLC2) site.

The Site is located in the middle of a downtown city block and is currently surrounded on three

sides by active commercial establishments, Artistic Printing Company, La Quinta, and Utah Paper Box. The 4th side of the site is bordered by the Utah Power and Light (UPL) substation. The Artistic Printing Company, a small custom print shop, is a few feet to the northwest of the Site. The 18,000 sq ft, slab-on-grade building was constructed prior to 1940. The building is currently in daily use by 24 employees working two shifts, 5-days per week. The LaQuinta Parcel, which includes an asphalt AMPCO Parking Lot and the Frank Edwards Building, is situated on the north and northeast sides of the site. The parking lot is used daily by individuals working or visiting downtown establishments or the Delta Center which is located across the street. The Frank Edwards Building is a one-story, 23,000 square foot structure which is located on the northeast corner of the block and is unoccupied. The Utah Paper Box Company is a 57,000 square foot building which was constructed before 1940 and borders the site on the south. The building is currently in daily use by 60 employees working multi-shifts, 7-days per week. On a larger scale, the Utah Power and Light Substation parcel currently encompasses the site. The UPL Substation is located immediately to the west of the Site and consists of an 8,800 square foot, 2-story cinder-block building. The entire UPL parcel surface is capped by crushed gravel to an approximate depth of 0-6 inches. The substation is visited frequently by a limited number of UPL employees and it is reported that a portion of the property is occasionally used for parking by UPL personnel.

C. Asbestos-related Disease:

Asbestos-related diseases include (1) pleural disease (plaques, diffuse thickening, calcifications, and pleural effusions), (2) interstitial disease (fibrosis of pulmonary tissue), (3) lung cancer, and (4) mesothelioma (a rare cancer of mesothelial cells in the pleura or peritoneum) (Albeda, 1982; Anderson, 1976; Kilburn, 1985; McDonald, 1997; MaGee, 1986; Selikoff, 1965). The risk of developing an asbestos-related disease depends on fiber characteristics, the level and duration of exposure, the time since first exposure, the individual's smoking history, and the individual response to the presence of asbestos fibers in pulmonary tissue. Researchers have not determined a safe level of asbestos exposure, but in general the longer a person is exposed to asbestos and the greater the intensity of the exposure, the greater the likelihood for asbestos-related health problems. While some forms of disease, especially cancers, may take as long as forty years to develop, there is concern that even short term exposures may have significant adverse health impacts. This is particularly true for children, where fibers lodged in the lungs may be able to exert their toxic effects for many more years as compared to exposures during adulthood.

IV. ENDANGERMENT RATIONALE

A. Disease from Exposure to Libby Vermiculite Contaminated with Asbestos

Airborne exposure to asbestiform minerals originating from Zonolite Mountain in Libby, Montana is hazardous to human health.

Previous studies in the early 1980's by researchers from McGill University (McDonald 1986a-b) and the National Institute for Occupational Safety and Health (NIOSH) (Amandus 1987a-c) found that former employees of the Libby vermiculite mine had substantial asbestos exposure, as

well as significantly increased pulmonary morbidity and mortality from asbestosis and lung cancer. Researchers at NIOSH who studied the annual chest x-rays of mine and mill workers with at least 5 years tenure (between 1975 and 1982) found an increased prevalence of the radiographic abnormalities associated with asbestos-related disease. A recent followup mortality study of Libby vermiculite workers found that "they have suffered severely from both malignant and non-malignant respiratory disease." The overall proportionate mortality among the group for mesothelioma was extremely high, being similar to that seen for crocidolite miners in South Africa and Australia (McDonald, 2002).

More recent studies conducted in association with the ongoing investigations in Libby have identified markedly elevated mortality rates of asbestosis, lung cancer, and mesothelioma for the Libby population, as well as, significantly increased rates of asbestos-related radiologic abnormalities among non-occupationally exposed individuals who worked or lived in Libby for at least six months prior to 1990 (ATSDR 2000, ATSDR 2002a, ATSDR 2002b, Peipins 2003, EHP 2004).

In addition to the Libby site, contaminated vermiculite ore was shipped and processed at numerous facilities throughout the United States also resulting in elevated asbestos-related disease among workers (Lockey, 1984). In one recently reported case, a man died of progressive asbestos disease 50 years after being exposed to contaminated Libby vermiculite after only 2 months of exposure at an offsite processing plant at age 17 (Wright, 2002). Fatal asbestos disease has also been reported among non-occupationally exposed individuals who directly contacted contaminated vermiculite waste materials around a former processing facility (Srebro, 1994) and contaminated vermiculite attic insulation used in homes throughout the United States (Harashe v. Flintkote, 1993).

B. Asbestos Exposures Resulting From Contaminated Bulk Materials

Disturbance of soils, dusts, insulation, garden products, and other bulk materials contaminated with asbestiform minerals from Libby, Montana results in a complete pathway for airborne human exposure and such exposures may easily approach and exceed available human health guidance.

1. Soils & Dust:

Asbestos fibers in soil or dust are not inherently hazardous to humans if left undisturbed. However, most soils and dusts are subject to disturbance, either now or in the future, by many different types of activities that are common for residents or workers. Ongoing EPA investigations at the Libby site have demonstrated that mechanical disturbance of asbestos-contaminated soil or dust by activities similar to those that are likely to be performed by area residents or workers results in elevated levels of respirable asbestos fibers in air. EPA Region 8 evaluated several scenarios involving disturbance of contaminated soils and dusts such as vehicular traffic on Rainy Creek Road, active cleaning of households, sweeping of dust, and rototilling of soil. These scenarios clearly demonstrated that asbestos fibers may be released into the air by a variety of common activities and that a complete pathway exists by which asbestos-contaminated source materials may cause inhalation exposure of area residents and workers. Additionally, EPA found that the concentrations of fibers in air generated by disturbance of

source materials may exceed OSHA standards for acceptable occupational exposure, as well as, exceeding EPA's typical excess cancer risk range ($1\text{E-}04$ to $1\text{E-}06$) by an order of magnitude or more. (Weis, 2001a, Weis, 2001b).

In addition to the Libby site, investigations by researchers in EPA Regions 9 and 10 have also found that soils contaminated with very low concentrations of asbestos can easily result in high airborne fiber exposures when disturbed. This is consistent with published research performed by Addison et. al. (Addison, 1988) which showed that even soils containing asbestos concentrations as low as 0.001% can generate potentially hazardous airborne concentrations when disturbed.

Currently EPA has not established an asbestos level in soil or dust below which an exposure does not pose a risk, under any of its regulatory programs. The 1% asbestos concentration levels commonly cited and used for regulatory purposes under the EPA Toxic Substances Control Act (TSCA) abatement program, was established on the basis of analytical capability at the time and does not have any relationship to the actual health risks associated with the handling or disturbance of the contaminated material in question. California EPA is currently in the process of adopting new guidance for asbestos contaminated soils at schools which recommends that soils containing asbestos concentrations greater than or equal to 0.001% asbestos by weight (transmission electron microscopy (TEM) analysis) may need to be remediated, especially in high use areas such as playing fields and dirt roads (Cal/EPA, 2004).

Of note, findings of "trace" asbestos concentrations by the commonly used polarized light microscopy (PLM) methods for bulk material analysis, typically soil, indicates that the asbestos concentration of the bulk material is at the very least about 0.2% (the analytical limits of the method); which is well above soil concentrations of 0.001 % identified (TEM methods) as being potentially hazardous. Additionally, "non-detectable" concentrations of asbestos in solid media as reported by PLM may still contain hazardous concentrations of asbestos which will become airborne if disturbed. Such was the case observed by EPA investigators (Versar, 2002) in which vermiculite insulation found to be non-detectable for asbestos by PLM techniques, released hazardous concentrations of airborne asbestos fibers, exceeding the OSHA PEL, when disturbed. Depending on the circumstances, higher resolution techniques, such as TEM, may be more useful to ensure accurate identification of low, yet still potentially hazardous, concentrations of asbestos in solid matrices.

2. Libby Vermiculite Products

Disturbance of vermiculite products (e.g., vermiculite insulation, vermiculite garden products) originating from the Libby mine can result in elevated levels of respirable asbestos fibers in the air. Activities similar to those likely to be performed by homeowners and workers that disturb vermiculite products containing even trace amounts or non-detectable concentrations of asbestos by PLM methods, have been demonstrated to release concentrations of fibers which may well exceed OSHA and EPA guidelines (Versar, 2002; EPA Region 10, 2000). Recognition of this finding has resulted in national warnings by EPA, ATSDR, and NIOSH concerning the dangerous nature of vermiculite insulation used in residences and businesses throughout the United States (EPA & ATSDR, 2003; NIOSH Fact Sheet 2003)

C. Occupational Exposure Guidance & Acceptable Risks

While airborne asbestos exposures resulting from disturbance of contaminated bulk materials may approach and exceed occupational limits, the use of occupational methods and guidance for uninformed workers and residential populations is problematic and is not adequately protective of human health.

Comparisons of non-occupational airborne asbestos measurements to the OSHA PEL are somewhat problematic in that the OSHA method (typically NIOSH 7400) specifies the use of a phase contrast microscope (PCM). The Agency's experience with analyzing materials for Libby amphibole asbestos is that the PCM will undercount asbestos fibers thinner than 0.25 μm , while counting non-asbestos materials with a fibrous appearance such as grass or leaf fibers (Libby Action Memorandum, May 2002; Weis, December 2001). The end result is that a TEM analysis of an outdoor or even an interior residential sample would report a lower value than a PCM analysis if potentially interfering materials (e.g. -leaves, carpet fibers, sawdust) are present.

Additionally, it should be noted that OSHA limits for asbestos exposure are established for presumably healthy, informed workers who: a) are trained about the hazards of the occupational environment, b) have specific asbestos training and access to appropriate personal protective equipment, and c) actively participate in an appropriate medical surveillance program. The occupational guidelines are not intended to be protective of the myriad members of an unsuspecting population, including children or those with sensitized or compromised pulmonary conditions. OSHA when it established its "permissible exposure limit" (PEL) of 0.1 fiber/cc for workers stated that its "risk assessment . . . showed that reducing exposure to 0.1 f/cc would further reduce, but not eliminate, significant risk. The excess cancer risk at that level would be reduced to a lifetime risk of 3.4 per 1,000 workers and a 20 year exposure risk of 2.3 per 1,000 workers" (59 FR 40964, 40978). OSHA also noted that the agency "has always considered that a working lifetime risk of over 1 per 1000 from occupational causes is significant" (59 FR at 40966). Notably, OSHA found that the 0.1 f/cc exposure level would present an even greater risk except for the fact that "the exposure limit is accompanied by mandated work practice controls and requirements for hazard communication, training and other provisions" (59 FR at 40981). In other words, the 0.1 f/cc exposure level is appropriate only for those trained workers who receive protective gear and work under mandated conditions, and even then, the significant risk is not eliminated (Preamble to OSHA's rules setting occupational asbestos limits published in the Federal Register on August 10, 1994).

V. SLC2 SITE ENVIRONMENTAL DATA EVALUATION

A. Exterior Areas

In October 2002, EPA investigators performed exterior inspection and soil sampling in a rectangular area around the former vermiculite processing facility (of note: the facility is no longer present). During this evaluation, the area was divided into 37 grids with about three samples collected per grid at soil surface and subsurface locations. Of the 100 samples collected, vermiculite was visibly present about 30% of the time. Sampling analysis by PLM found the

presence of Libby Amphibole (LA) in 92% (92/100) of all samples, with LA concentrations ranging from non-detectable to 18%. Fifteen percent of the samples revealed LA concentrations equal to or in excess of 1%.

In September 2003, EPA investigators performed additional site sampling and characterization. During this investigation soil sampling was extended to perimeter areas of the overall site, as well as, areas outside of other facilities located on the site that were not assessed previously. The presence of LA was found in 58% of the 72 soil samples evaluated by PLM. Samples with non-detectable concentrations of LA were most commonly found in area grids located along the outside perimeter of the site.

B. Interior Areas

1. Dust Sampling results:

During the September 2003 site visit, EPA investigators collected five interior dust samples within Artistic Printing and three dust samples within the Utah Power and Light Blockhouse. In December 2003, EPA investigators performed additional interior dust sampling of several facilities, including Artistic Printing (6 samples), La Quinta (3 samples), and Utah Paper Box (6 samples). The following summarizes the results of these dust samples:

- * Artistic Printing. Dust sample results for Artistic Printing showed the presence of LA fibers in 73% (8/11) of the samples, with LA concentrations in positive samples ranging from 122 to 14,600 S/cm².
- * Utah Power & Light. Dust sample results taken in the Blockhouse revealed the presence of LA fibers in all three samples, with LA concentrations ranging from 2,400 to 292,000 S/cm².
- * La Quinta. Two of the three dust sample taken in differing areas of the La Quita facility revealed the presence of LA fibers, with LA concentrations ranging from 353 to 1,160 S/cm².
- * Utah Paperbox. The six dust samples taken in Utah Paperbox did not reveal the presence of any LA fibers. Chrysotile asbestos, not related to Libby vermiculite processing, was detected in one dust sample. This facility was reported to have a very rigorous housekeeping program which entailed thorough and regular cleaning of the work areas, especially during installation of new high-end equipment.

2. Air Sampling results:

In December 2003, in addition to dust samples, EPA investigators collected several air samples within Artistic Printing and Utah Paperbox facilities. At Artistic Printing, the results of the two personal and five stationary air samples revealed the presence of airborne LA fibers (0.003 S/cm²) in one stationary air sample collected in the Administrative Office area. At Utah Paperbox, the results of the one personal and six stationary air samples did not reveal the presence of airborne LA fibers in any of the samples.

VI. SUMMARY

- A. Visible vermiculite was widely seen in surface and subsurface soil evaluations throughout the SLC2 site. Furthermore, detectable concentrations of LA, in one instance as high as 18%, was found in over 92% of the surface and subsurface soil samples taken in close proximity to the area of the former vermiculite facility and 52% of the soil samples taken at more distant locations around other facilities and the perimeter of the site. LA contaminated surface soils contain asbestos fibers which are likely to become airborne when disturbed by foot traffic, automobile traffic, and a variety of other routine activities.
- B. Interior dust samples taken inside Artistic Printing, La Quinta, and the Utah Power & Light Blockhouse showed detectable concentrations of LA fibers. Results of limited air sampling in the Artistic Printing facility during routine work conditions found the presence of airborne LA fibers in an administrative office area.
- C. The presence of LA contaminated exterior soils and interior dusts poses an exposure hazard for individuals, such as workers, who may frequent and disturb such materials on a routine basis. Asbestos contaminated source materials, such as surface soils, may also serve as an ongoing reservoir for fiber emission and contamination into co-located indoor environments or vehicles, through air currents or transport via human activity (i.e., soil adherence to shoes). Once contaminated, such areas or vehicles can then in-turn serve as secondary sources of ongoing human exposure.
- D. Findings of airborne LA fibers in an office area of Artistic Printing demonstrates the propensity of contaminated environments to release fibers into the air and form a completed pathway for human exposure. Outdoor activities (e.g., raking and leaf blowing) performed at the newer Vermiculite Intermountain site located at 800 South 733 West (SLC1 Site) demonstrated that even soils containing less than 1% LA can generate airborne exposures which easily approach, and even exceed, the occupational limits when disturbed. These findings are consistent with the results of EPA investigations at other sites, as well as, evaluations performed by other government agencies and researchers. For example, disturbance of an outdoor high school playing field containing 0.01% asbestos concentrations resulted in hazardous airborne asbestos concentrations when disturbed (communication per A. Den, EPA Region 9).
- E. Chronic, and even higher dose short-term, exposures to airborne LA fibers pose an increased risk for lung diseases such as pleural fibrosis, asbestosis, mesothelioma, and lung cancer. Sampling events at the Intermountain Insulation Site have confirmed the presence of amphibole asbestos in soils, dust, and visible vermiculite at concentrations of concern and indicate an on-going risk to workers and visitors who may routinely frequent the site. Given the known toxicity of LA for causing asbestos-related disease and mortality, it is reasonable to conclude that any human exposure, especially those more frequent and of higher concentration, to the LA asbestos may pose an imminent and

substantial threat to public health and welfare

VII. CONCLUSION

Libby amphibole asbestos contamination exists in outdoor soil throughout the SLC2 site, as well as, indoor dust in the Artistic Printing, La Quinta, and Utah Power & Light facilities. If these contaminated sources are disturbed by human activities, fibers are likely to be released to air. The levels of fibers released to the air depends upon the concentration of fibers in the source material(s) and on the nature of the disturbance(s). The risks of human disease are proportional to the concentration of fibers in air and the frequency and duration of exposures. While data are not yet sufficient to perform reliable human-health risk evaluations for all sources and all types of disturbances; it is apparent that airborne fiber concentrations demonstrated to occur with disturbance of contaminated soil and dust, similar to that observed at the SLC2 site, can exceed acceptable health risks for both residents and workers. This is especially true for naive work populations that are not aware of ongoing exposures, nor trained to handle asbestos, nor enrolled in appropriate worker protection and medical surveillance programs. On this basis, I recommend that steps be taken to reduce or eliminate pathways of human exposure to LA from contaminated source materials, such as soil and dust, at the Vermiculite Intermountain Site at 100 South 333 West (SLC2), Salt Lake City, Utah, in order to protect naive work populations or other individuals who may regularly utilize this site.

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ATTACHMENT 3

Applicable or Relevant and Appropriate Requirements (ARARs) for the Removal Actions Vermiculite Intermountain Site, Salt Lake City/County, Utah

In accordance with Section 300.415(j) of the NCP, all ARARs for the Site will be attained, to the extent practicable, given the scope of the project and the urgency of the situation.

Statute	Implementing Regulation	Status	Requirements	Comments
FEDERAL ARARS				
Endangered Species Act	50 CFR 200 50 CFR 402	N	Protects threatened or endangered (T&E) species and their habitat. Requires coordination with federal agencies to mitigate impacts.	If T&E species are identified within the removal areas, activities must be designed to conserve the T&E species and their habitat. To date no T&E species have been identified.
Fish & Wildlife Coordination Act	33 CFR 320-330 40 CFR 6.302(h) 50 CFR 83	A	Requires coordination with federal and state agencies for activities that have a negative impact on wildlife and/or non-game fish.	If the removal action involves activities that affect wildlife and/or non-game fish, conservation of habitats must be undertaken.
Clean Air Act	40 CFR Part 61, Subpart M (delegated to the state and incorporated by reference at ARM 17.8.341)	See below for specific regulations	National Emission Standards for Hazardous Air Pollutants (NESHAPS) for Asbestos	

A: Applicable

R: Relevant & Appropriate

N: Scope of the action does not trigger this requirement

X: Not an ARAR

Statute	Implementing Regulation	Status	Requirements	Comments
Clean Air Act	40 CFR 61.145(c) & (d)	A R	Standard for Demolition and Renovation. Provides detailed procedures for controlling asbestos releases during demolition of a building containing "regulated-asbestos containing material" (RACM) as defined in the regulations.	Applicable to building demolitions that will occur as part of the removal if certain threshold volumes of RACM are disturbed. The dust control portions of the regulations are relevant and appropriate for soil disturbance activities and for asbestos contaminated material that does not meet the strict definition of RACM.
Clean Air Act	40 CFR 61.149 Note: Section 61.149(c)(2) is not delegated to the State	R	Standard for Waste Disposal at Asbestos Mills. Provides detailed procedures for handling and disposal of asbestos containing waste material generated by an asbestos mill as defined by 40 CFR 61.142.	This regulation is considered relevant and appropriate to the soils disposal. It is not applicable because the facilities do not meet the regulatory definition of an asbestos mill.
Clean Air Act	40 CFR 61.150 Note: Section 61.150(a)(4) is not delegated to the State	A R	Standard for waste disposal for manufacturing, fabricating, demolition, renovation and spraying operations. Similar to 40 CFR 61.149, this section provided detailed procedures for processing, handling and transporting asbestos containing waste material generated during building demolition and renovation (among other sources).	Applicable to RACM generated if building demolitions occur as part of the removal. Relevant and appropriate for soil disturbance activities and for asbestos contaminated material that does not meet the strict definition of RACM.
Clean Air Act	40 CFR 61.151 Note: Section 61.151(c) is not delegated to the State	R	Standard for inactive waste disposal sites for asbestos mills and manufacturing and fabricating operations. Provides requirements for covering, revegetation and signage at facilities where RACM will be left in place.	These requirements would be relevant and appropriate to asbestos containing soils/ and or debris left in place.

A: Applicable

R: Relevant & Appropriate

N: Scope of the action does not trigger this requirement

X: Not an ARAR

Statute	Implementing Regulation	Status	Requirements	Comments
Clean Air Act	40 CFR 61.152 Note: Section 61.152(b)(3) is not delegated to the State	A R	Air-cleaning. Provides detailed specifications if air cleaning is used as part of a system to control asbestos emissions control system.	These requirements would be applicable if air cleaning is part of the building demolitions. It would be relevant and appropriate to other air cleaning operations.
Clean Air Act	40 CFR 61.154 Note: Section 61.154(d) is not delegated to the State	X	Standard for active waste disposal sites. Provides requirements for off-site disposal sites receiving asbestos-containing waste material from building demolitions and other specific sources.	Does not meet the definition of an ARAR which applies only to on-site actions. Regulations are applicable to off-site disposal of ACM from the building demolitions.
Clean Air Act	40 CFR 61.155	N	Standard for operations that convert asbestos containing waste material into nonasbestos (asbestos-free) material	It is not anticipated that the removal action will include any such treatment of asbestos containing materials. This section will be applicable if treatment occurs.
TSCA	40 CFR Part 763, Subpart G (implemented by the State under the Montana Asbestos Control Act)	X	Asbestos Abatement Projects	The State requires that work be performed in accordance with 40 CFR 763.120 and 763.121 (asbestos abatement projects) and 29 CFR 1926.58 (asbestos standard for the construction industry). These requirements will be incorporated into the health & safety plan but do not meet the definition of an ARAR.

A: Applicable

R: Relevant & Appropriate

N: Scope of the action does not trigger this requirement

X: Not an ARAR

Statute	Implementing Regulation	Status	Requirements	Comments
National Historic Preservation Act	36 CFR 800 40 CFR 6.301 (b) 43 CFR 7	A	Establishes procedures to take into account the effect of actions on any historical properties included on or eligible for inclusion on the National Register of Historic Places. If the activity will have an adverse effect, and this effect can not be reasonably avoided, measures need to be taken to minimize or mitigate the effects.	If cultural resources on or eligible for the national register are present, it will be necessary to determine if there will be an adverse effect and if so how the effect may be minimized or mitigated.
Archeological and Historic Preservation Act		A	Provides for the preservation of historical and archeological data that might be lost as part of a federal action. It differs from NHPA in that it encompasses a broader range of resources than those listed on the National Register and mandates only the preservation of data (including analysis and publication).	

A: Applicable

R: Relevant & Appropriate

N: Scope of the action does not trigger this requirement

X: Not an ARAR

Vermiculite Insulation

STATE ARARs

UDEQ comments regarding ARAR's prepared for the Intermountain Insulation Site.

Statute	Implementing Regulation	Status	Requirements	Comments
Clean Air Act Utah Air Quality Rules	40 CFR 61.145(a) UAQR R307-214-1	A	Requires for owner or operator of a demolition or renovation activity to thoroughly inspect the affected facility or part of the facility where the demolition or renovation will occur for the presence of asbestos.	The facility was thoroughly inspected during sampling activities conducted in 2001, October 14-16, 2002, and August 4-6, 2003 during which the presence of ACM was detected.
Clean Air Act Utah Air Quality Rules	40 CFR 61.145(b) UAQR R307-801-11	X	Provides requirement for notification to the Utah Division of Air Quality prior to demolition and/or renovation activities.	The UDAQ requests notification at least 1 day before the removal action activity begins.
Utah Air Quality Rules	UAQR R307-801-2	R	Describes the the general applicability of the UAQR Asbestos Regulations.	While certification issued by the State of Utah is not applicable to the removal action activity, contracted asbestos abatement companies and their employees should obtain relevant and applicable training/certification if they are involved in the work as described in the regulation.
Utah Air Quality Rules	UAQR R307-801-5	R	Requirement for proper Company Certification to perform asbestos	While certification issued by the State of Utah is not applicable to the removal action activity, the contracted asbestos company will
Utah Air Quality Rules	UAQR R307-801-6	R	Requirement for proper Individual Certification to perform asbestos abatement activities in the State of Utah.	While certification issued by the State of Utah and training courses approved by the State of Utah are not applicable to the removal action activity, employees of the contracted asbestos company will have completed a relevant and appropriate asbestos abatement training course prior to performing any work asbestos related work on-site.
Utah Air Quality Rules	UAQR R307-801-13	A	This section requires that every person who handles and disposes of asbestos waste shall be certified in compliance with R307-801	While certification issued by the State of Utah is not applicable to the removal action activity, the contracted asbestos company and their employees will possess relevant and appropriate asbestos abatement certification prior to performing any work on-site.
Utah Air Quality Rules	UAQR R307-309-3	A	Opacity for PM10 fugitive dust shall not exceed (a) 10% at property boundary; and (b) 20% on-site.	While the fugitive dust regulations are applicable to the removal action activity for the soils, fugitive dust issues are adequately addressed under the 40 CFR 61.14(c) regulation cited.
Utah Water Quality Rules	UWQR R317-8-3.9(1)(h)1.b.	N	Defines UPDES permit requirements for Storm Water Discharges associated with a small construction activity.	While the removal activity is not subject to UPDES permitting requirements, and under the provisions defined in R317-8-3.9(6)(e) the removal action activity will not result in land disturbance greater than one acre, land disturbance activity and on-site waste management should be addressed with best mangement practices to prevent adverse impacts to water quality.

A - Applicable

R - Relevant and
AppropriateN - Scope of Action does
not trigger this requirement

X - Not an ARAR